Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of the Claims:

In the Claims:

1.   (Currently Amended) A method comprising:

selecting an original training sequence from a set of possible original training sequences having at ~~least~~ one or more desired ~~property~~ properties, the original training sequence comprising a sequence of complex numbers corresponding to phase shifts employed by a π/M – MPSK modulation format; and

forming a modified training sequence by ~~modifying the original training sequence based on a corresponding modifying sequence~~ multiplying each element of the original training sequence by a corresponding element of a modifying sequence, the modifying sequence comprising a sequence of pairs of equal complex numbers, wherein each pair of equal complex numbers comprises the previous pair of complex numbers multiplied by $\exp(j2\pi/M)$;

~~such that~~ <u>wherein</u> the modified training sequence exhibits the <u>one</u>

<u>or more</u> desired ~~property~~ <u>properties</u> of the original training sequence

when used in a peak to average power constrained modulation format

that would otherwise impair the <u>one or more</u> desired ~~property~~ <u>properties</u>

of the original training sequence.

2. (Currently Amended) The method of claim 1, further comprising

appending a prefix and a suffix to the original training sequence prior to forming

~~a~~ <u>the</u> modified training sequence.

3. (Currently Amended) The method of claim 1, wherein <u>the</u> selecting ~~an~~ <u>of</u>

<u>the</u> original training sequence comprises cyclically shifting the original training

sequence by some integer.

4. (Currently Amended) The method of claim 1, wherein the <u>one or more</u>

desired ~~property~~ <u>properties</u> ~~comprises~~ <u>comprise</u> a function of the autocorrelation

of any original training sequence in the set of possible original training sequences

being below a threshold value.

5.   (Currently Amended) The method of claim 1, wherein the ~~one or more~~ desired ~~property~~ properties ~~comprises~~ comprise a function of the cross-correlation of any original training sequence in the set of possible original training sequences with any other original training sequence in the set of possible original training sequences being below a threshold value.

6. – 9. (Cancelled)

10.   (Currently Amended) The method of claim ~~9~~ 1, wherein the modulation format is a $\pi/2 - 2PSK$ modulation format.

11.   (Original) The method of claim 10, wherein the modifying sequence comprises the sequence (1,1,-1,-1) repeating.

12.   (Currently Amended) The method of claim ~~6~~ 1, wherein selecting ~~an~~ the original training sequence comprises selecting a Gold sequence from a family of Gold sequences.

13. – 45.   (Cancelled)

46.   (Previously Presented) The method of claim 1, wherein the modified

training sequence is applied to at least one of a TDMA, a FDMA, a CDMA and a

FDD radio communications system.

47.   (Canceled)

48.   (Canceled)

49.   (New) A method comprising:

selecting an original training sequence from a set of possible

original training sequences having at one or more desired properties, the

original training sequence comprising a sequence of phase shifts to be

performed on a waveform as employed by a π/M – MPSK modulation

format; and

forming a modified training sequence by multiplying each element

of the original training sequence by a corresponding element of a

modifying sequence, the modifying sequence comprising a sequence of

pairs of equal phase shifts, wherein each pair of equal phase shifts is larger

in magnitude by $2\pi/M$ radians than the previous pair of equal phase shifts;

wherein the modified training sequence exhibits the one or more

desired properties of the original training sequence when used in a peak

to average power constrained modulation format that would otherwise

impair the one or more desired properties of the original training

sequence.

50.   (New) The method of claim 49, wherein the modulation format is a $\pi/2$ –

2PSK modulation format.

51.   (New) The method of claim 50, wherein the modifying sequence

comprises the sequence $(0,0, \pi, \pi)$ radians repeating.

52.   (New) A method comprising:

transmitting a modified training sequence derived by selecting an

original training sequence from a set of possible original training

sequences having at one or more desired properties, the original training

sequence comprising a sequence of phase shifts to be performed on a

waveform as employed by a π/M – MPSK modulation format, and

multiplying each element of the original training sequence by a

corresponding element of a modifying sequence, the modifying sequence

comprising a sequence of pairs of equal phase shifts, wherein each pair of

equal phase shifts is larger in magnitude by 2π/M radians than the

previous pair of equal phase shifts.

53.   (New) An base station comprising:

a data storage element to store a modified training sequence

derived by selecting an original training sequence from a set of possible

original training sequences having at one or more desired properties, the

original training sequence comprising a sequence of phase shifts to be

performed on a waveform as employed by a π/M – MPSK modulation

format, and multiplying each element of the original training sequence by

a corresponding element of a modifying sequence, the modifying

sequence comprising a sequence of pairs of equal phase shifts, wherein

each pair of equal phase shifts is larger in magnitude by 2π/M radians

than the previous pair of equal phase shifts;

a receiver to receive a communication waveform; and

a processor to train the apparatus using the received

communication waveform and the stored modified training sequence.

54. (New) The base station of claim 53, wherein the original training sequence

is selected by cyclically shifting the original training sequence by some integer.

55. (New) The base station of claim 53, wherein the one or more desired

properties comprise a function of the autocorrelation of any original training

sequence in the set of possible original training sequences being below a

threshold value.

56. (New) The base station of claim 53, wherein the one or more desired

properties comprise a function of the cross-correlation of any original training

sequence in the set of possible original training sequences with any other original

training sequence in the set of possible original training sequences being below a

threshold value.

57.　(New) A machine-readable medium having stored thereon data representing instructions that, when executed by a processor, cause the processor to perform operations comprising:

selecting an original training sequence from a set of possible original training sequences having at one or more desired properties, the original training sequence comprising a sequence of complex numbers corresponding to phase shifts employed by a π/M – MPSK modulation format; and

forming a modified training sequence by multiplying each element of the original training sequence by a corresponding element of a modifying sequence, the modifying sequence comprising a sequence of pairs of equal complex numbers, wherein each pair of equal complex numbers comprises the previous pair of complex numbers multiplied by $\exp(j2\pi/M)$;

wherein the modified training sequence exhibits the one or more desired properties of the original training sequence when used in a peak to average power constrained modulation format that would otherwise impair the one or more desired properties of the original training sequence.

58.   (New) The machine-readable medium of claim 57, further comprising appending a prefix and a suffix to the original training sequence prior to forming the modified training sequence.

59.   (New) The machine-readable medium of claim 57, wherein the selecting of the original training sequence comprises cyclically shifting the original training sequence by some integer.

60.   (New) The machine-readable medium of claim 57, wherein the one or more desired properties comprise a function of the autocorrelation of any original training sequence in the set of possible original training sequences being below a threshold value.

61.   (New) The machine-readable medium of claim 57, wherein the one or more desired properties comprise a function of the cross-correlation of any original training sequence in the set of possible original training sequences with any other original training sequence in the set of possible original training sequences being below a threshold value.

62. (New) The machine-readable medium of claim 57, wherein the modified

training sequence is applied to at least one of a TDMA, a FDMA, a CDMA and a

FDD radio communications system.